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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,360	07/29/2003	Takaharu Yuyama	240968US3X	5187

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EXAMINER

MCKINNON, TERRELL L

ART UNIT	PAPER NUMBER
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3743

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,360

Applicant(s)

YUYAMA ET AL.

Examiner

Terrell L Mckinnon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07/2/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hisano et al. (U.S. 5,198,889).

Hisano discloses a cooling apparatus comprising all of the applicant's claimed and disclosed limitations.

3. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Itoh (U.S. 5,396,947).

Itoh discloses a cooling radiating devices comprising all of the applicant's claimed and disclosed limitations.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hisano et al. (U.S. 5,198,889) in view of Murase et al. (U.S. 4,982,274).

Hisano's invention discloses all of the claimed limitations from above except for the tank comprising a pipe of circular cross section and is provided with a groove on an inner surface thereof; and wherein the groove has a depth of 0.01 to 0.5 mm and a pitch of 4 mm or less.

6. However, Murase teaches a pipe of circular cross section and is provided with a groove on an inner surface thereof; and wherein the groove has a depth of 0.01 to 0.5 mm and a pitch of 4 mm or less (column 3, lines 20-38).

Given the teachings of Murase, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling apparatus of Hisano with a pipe of circular cross section and provided with a groove on an inner surface thereof; and wherein the groove has a depth of 0.01 to 0.5 mm and a pitch of 4 mm or less.

Doing so would provide a sufficient groove depth for improving the heat pipes transferring capability.

7. Claims 6, 9, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. (U.S. 5,396,947) in view of Hisano et al. (U.S. 5,198,889).

Itoh discloses a radiating device comprising:

- a heat pipe type heat exchanger comprising a tank (Fig 10, column 5, lines 35-49). ;
- a plurality of pipes provided upstanding on and joined to a side of the tank to be in communication with the tank, the plurality of pipes being

closed at an end thereof opposite an end where the plurality of pipes are joined to the tank (Figs. 7-9);

- a working fluid sealed in said tank and movable between said plurality of pipes and the tank;
- a base block of metal having the tank embedded therein (column 5, lines 35-49); and

a plurality of tins provided on said plurality of pipes;

- wherein the plurality of pipes are angled relative to said base block such that when the base block is mounted vertically, said plurality of pipes extend at an angle relative to a horizontal plane;

8. Itoh discloses the claimed invention except for a plurality of tanks. It would have been obvious to one having ordinary skill in the art at the time the invention was made to for Itoh invention to comprise a plurality of tanks, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Itoh's invention discloses all of the claimed limitations from above except for the tank having a larger cross-sectional area than that of the plurality of pipes.

9. However, Hisano teaches a tank (60) having a larger cross-sectional area than that of the plurality of pipes (Fig. 23).

Given the teachings of Hisano, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling apparatus of Itoh with a tank

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having a larger cross-sectional area than that of the plurality of pipes; and the plurality of pipes being angled 5 to 10 degrees relative to the horizontal.

Doing so would provide increase the surface area of the heat generating component for enhanced boiling of the phase change fluid.

10. Claims 7, 8, 10, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. (U.S. 5,396,947) in view of Hisano et al. (U.S. 5,198,889) as applied to claims above, and further in view of Murase et al. (U.S. 4,982,274).

Itoh's invention, as modified by Hisano, discloses all of the claimed limitations from above except for the tank comprising a pipe of circular cross section and is provided with a groove on an inner surface thereof; and wherein the groove has a depth of 0.01 to 0.5 mm and a pitch of 4 mm or less.

11. However, Murase teaches a pipe of circular cross section and is provided with a groove on an inner surface thereof; and wherein the groove has a depth of 0.01 to 0.5 mm and a pitch of 4 mm or less (column 3, lines 20-38).

Given the teachings of Murase, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling apparatus of Itoh with a pipe of circular cross section and provided with a groove on an inner surface thereof; and wherein the groove has a depth of 0.01 to 0.5 mm and a pitch of 4 mm or less.

Doing so would provide a sufficient groove depth for improving the heat pipes transferring capability.

12. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. (U.S. 5,396,947) in view of Hisano et al. (U.S. 5,198,889)

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as applied to claims above, and further in view of Gammel et al. (U.S. 3,834,454).

Itoh's invention, as modified by Hisano, discloses all of the claimed limitations from above except for the each of the tank being screwed to the base block with mounting hardware.

13. However, Gammel the use of tank being screwed to the base block with mounting hardware (Figs. 1-3).

Given the teachings of Gammel, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling apparatus of Itoh with the tank being screwed to the base block with mounting hardware.

Doing so would provide a safe and reliable means of supporting the cooling device.

Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited for disclosing related limitations of the applicant's claimed and disclosed invention. Brown, Ferro et al, McCullough, Dibene, II et al, Ettehadieh, Suzuki et al and Kuo.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L Mckinnon whose telephone number is 703-305-0059. The examiner can normally be reached on Monday -Thursday and every other Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 308-0101. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Terrell L McKinnon
Primary Examiner
Art Unit 3743
April 19, 2004